

In the Claims:

Please amend the claims as follows:

1. (Currently Amended) A method of determining structural integrity of a bone within the spine of a patient using a neurophysiology system, the bone having a first aspect and a second aspect, said second aspect separated from said first aspect by a width and located adjacent to a spinal nerve, said method comprising:

applying an electrical stimulus to said first aspect of said bone;
electrically monitoring a muscle myotome associated with said spinal nerve;
automatically determining an onset neuro-muscular response to the application of said electrical stimulus to said first aspect of said bone by automatically increasing said electrical stimulus until said onset neuro-muscular response is detected, wherein said automatic increasing is controlled by said neurophysiology system; and

communicating to a surgeon operating on the patient's spine an onset electrical stimulus level which causes said onset neuro-muscular response.

2. (Original) The method of claim 1, wherein the electrical stimulus is emitted from an electrode disposed on the distal end of at least one of a probe and surgical tool.

3. (Original) The method of claim 1, wherein applying an electrical stimulus comprises applying a plurality of electrical stimulus pulses.

4. (Previously Presented) The method of claim 3, wherein the plurality of electrical stimulus pulses comprises current pulses that automatically increase over time until said onset neuromuscular response is determined.

5. (Previously Presented) The method of claim 3, wherein the plurality of electrical stimulus pulses comprises current pulses that automatically vary incrementally until said onset neuromuscular response is determined.
6. (Original) The method of claim 3, wherein the plurality of electrical stimulus pulses comprises current pulses varied incrementally within a range from 0.5 to 32.0 milliamps.
7. (Original) The method of claim 3, wherein said bone is disposed within one of the cervical, thoracic, and lumbar region of the patient's spine.
8. (Original) The method of claim 1, wherein said spinal nerve exits from successive vertebrae within one of the cervical, thoracic, and lumbar region of the patient's spine.
9. (Original) The method of claim 1, wherein said onset neuro-muscular response is an electromyography response from a muscle coupled to said spinal nerve.
10. (Original) The method of claim 1, wherein electrically monitoring said muscle myotome is performed through the use of an electrode electrically coupled to said muscle myotome.
11. (Original) The method of claim 1, wherein said muscle myotome is disposed in one of the patient's arms.

12. (Original) The method of claim 1, wherein said muscle myotome is disposed in one of the patient's legs.
13. (Previously Presented) The method of claim 1, wherein said onset neuro-muscular response is determined by automatically assessing whether said neuro-muscular response is greater than a predetermined onset level and automatically increasing the electrical stimulus until the determined neuro-muscular response is greater than the predetermined onset level.
14. (Previously Presented) The method of claim 1, wherein communicating to said surgeon includes visually displaying to said surgeon an intensity level representing said onset electrical stimulus level causing said onset neuro-muscular response for said spinal nerve.
15. (Previously Presented) The method of claim 14, wherein visually displaying comprises illuminating lights.
16. (Previously Presented) The method of claim 14, wherein visually displaying comprises illuminating lights of varying colors.
17. (Original) The method of claim 16, wherein each color corresponds to a predetermined warning to the user.
18. (Previously Presented) The method of claim 1 and further, comprising audibly indicating to said surgeon an intensity level representing said onset electrical stimulus level causing said onset neuro-muscular response for said spinal nerve.

19. (Original) The method of claim 18, wherein audibly indicating comprises sounding an alarm if said onset neuro-muscular response is detected at a predetermined intensity level.

20. (Previously Presented) The method of claim 18, further comprising varying the volume of said alarm according to variations in said intensity level of said onset electrical stimulus level causing said onset neuro-muscular response.

21. (Previously Presented) The method of claim 20, wherein said volume of said alarm decreases as said intensity level of said onset electrical stimulus level causing said neuro-muscular response increases.

22. (Previously Presented) The method of claim 21, further comprising varying the frequency of said alarm according to said intensity level of said onset electrical stimulus level causing said onset neuro-muscular response.

23. (Previously Presented) The method of claim 22, wherein said frequency of said alarm decreases as said intensity level of said onset electrical stimulus level causing said onset neuro-muscular response increases.

24. (Original) The method of claim 1, wherein said first aspect of said bone comprises a region within a pedicle in contact with a pedicle screw.

25. (Original) The method of claim 1, wherein applying an electrical stimulus to said first aspect of said bone comprises applying said electrical stimulus to a proximal end of a bone screw inserted into said first aspect of said bone.

26. (Previously Presented) The method of Claim 14, wherein visually displaying involves the use of at least one of multi-color LEDs and an integrated display.